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CONSUMPTION (TUBERCULOSIS) IN CLASSICAL ANTIQUITY

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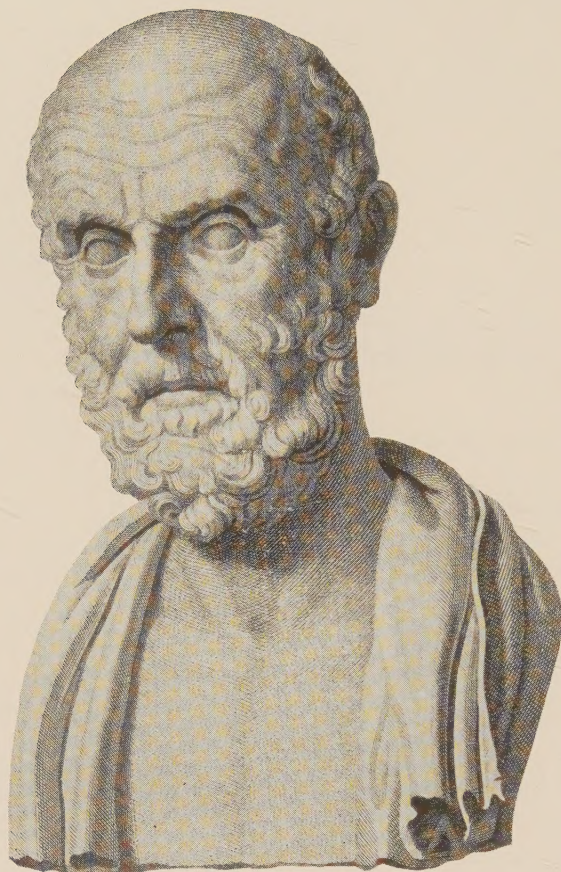
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HIPPOCRATES.
(460-377 B.C.)

CONSUMPTION (TUBERCULOSIS) IN CLASSICAL ANTIQUITY*

By BRUNO MEINECKE

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PREFATORY NOTE

INASMUCH as this work required a historical basis for its treatment, the chronological arrangement was deemed imperative. The word "tuberculosis" is several times employed from the layman's viewpoint, viz., as a synonym for "consumption"; it carries with it no formal scientific connotation, for it would be manifestly impossible to demonstrate the tubercle bacillus in a work of this kind. Many physicians use the word loosely in a similar manner.

All references to Hippocrates accord with the edition of Littré only; those to Galen will be found in the work of Kühn.

The Greek and Latin texts of medical authors have been omitted at the discretion of the writer for obvious reasons; the cost of paper and printing is too large an item to be disregarded by the average pedagogue, and furthermore the original is easily accessible to anyone who may be interested.

I wish to express a deep debt of gratitude to Professors Kelsey and Sanders of the University of Michigan, who not only by their scholarly example and attainments but by their marked understanding and appreciation of the human element in learning have ever been of the greatest personal inspiration to me. Their kindly encouragement recalls the famous dictum of Goethe: "Das eigentliche Studium der Menschheit ist der Mensch."

I desire, too, to record my thanks to my brother, H. A. Meinecke, M.D., of Detroit, who gave me many valuable

suggestions and whom I often consulted to verify my own conclusions. Of necessity such a work as this must at times have recourse to probabilities, for conclusive material is not in every case available.

I. CONSUMPTION IN REMOTE ANTIQUITY

Ca. 3000 B.C. The remote antiquity of consumption or tuberculosis does not fall within the immediate scope of this investigation; however, it should be noted that the Greek and the Roman phases of the disease can be linked with older civilizations and that the predynastic mummies of the Egyptians furnish the earliest proof of the existence of tuberculosis. A tuberculous disease of the spine with positive evidence of psoas abscess has been demonstrated in mummies dating as far back as the dawn of Egyptian history.¹

Ca. 2500 B.C. Further evidence is available in the Vedic Hymns. In the Rig Veda the cure of Yakshma, phthisis or consumption is the subject of a hymn: "I drive thy affliction away from thy eyes, thy nose, thy ears, thy chin, head, brain and tongue. I drive thy affliction from the tendons of thy neck and neck, breast-bone and spine, shoulders and arms. I drive thy affliction from vitals, rectum, heart, kidneys, liver, spleen. I drive thy affliction away from thy thighs, knee-caps, heels and from thy feet, thy hips, stomach, groins; I drive the malady away from thy excretions, thy hair, thy nails, from the whole of thee. I drive away thy malady from all members, each hair, each joint, from the whole of thee."² Williams³ defines the word Yakshma and Yakshman, translated in the above passage by "affliction" and "malady," as a "disease, probably of a consumptive nature, pulmonary consumption, consumption, decline"; while Griffith specifies that in this hymn:

* A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the University of Michigan. An abstract of this work has appeared in "Epidemiology and Public Health," by Dr. V. C. Vaughan, formerly Dean of the University of Michigan Medical School.

"the deity or subject is the cure of Yakshma or phthisis or consumption."⁴ In the Atharva Veda a reference occurs to a charm which cures consumption, and the plant kushtha is mentioned as a cure for a kind of consumption.⁵ Scrofula is also alluded to.⁶

Some commentators of the Bible have seen consumption in several passages, and, although the descriptions are in general too meager to admit of a definite demonstration, such a conclusion is not entirely fanciful. Atrophy of the bones and flesh is often referred to⁷; the figures of speech uttered by Moses in Leviticus⁸ and in Deuteronomy⁹ may well have been suggested by this malady; Daniel¹⁰ and Isaiah¹¹ may have had it in mind, and certainly the plague described in Zechariah¹² has reference to an intense emaciation, consumption or atrophy. The Hebrew word is from a root meaning to "waste away," a condition which is often the result of severe internal abscess. This may very well have been "The Great White Plague," and it may generally be assumed that the consumption of the Bible was the pulmonary phthisis of the western world. That the disease was well known in the Apostolic period can be conjectured from the careful description of Aretaeus, the Cappadocian, who, if his surname is not misleading, must have had an opportunity to associate both with Jews and Christians at Tarsus and other Asiatic centers.

Tuberculosis, then, seems to be a disease which has an unbroken sequence traceable to a civilization as early as 3000 B.C., but we may safely conclude that it existed and was known centuries before that time. In view of the historical record of the contact of these several civilizations it would hardly require a violent stretch of the imagination to believe that the Greeks took consumption from the Egyptians and that the former in turn passed it on to the Romans. We are the unfortunate recipients of this disease from these earlier peoples, and it would seem that the German *Volkskrankheit* is an apt term to designate tuberculosis, for it has been found in all ages, in all climates, and

in all countries where human beings have congregated.

II. GREEK HISTORY OF CONSUMPTION

The many positive references to consumption found in Greek and Roman writers, both medical and non-medical, establish beyond a doubt their full acquaintance with this malady. They manifest a keen observation of the symptoms, causes, development, and dreaded results of the disease, and, although we meet with no scientific explanation approaching the modern theory of tuberculosis, it is within the bounds of reason to suppose that some of the ancient physicians may have had at least a visual acquaintance with the small rounded nodules produced by the bacillus of tuberculosis, as subsequent references will suggest. That the ancients recognized the existence of the tubercle will appear as a reasonable inference; it will, however, appear as equally true that they did not associate the existence of true phthisis and the tubercle as belonging to the same disease.

The earliest Greek reference to consumption occurs in Homer¹³: "Nor did any disease come upon me, such as usually by grievous consumption takes the soul from the body." Hesychius defines *τηκεδών* as *τῆξις* or *φθίσις*; Pollux,¹⁴ it would seem, places *τηκεδών* in the same category with *φθίσις*, and Kühn's¹⁵ note is instructive; Suidas likewise gives the following citation: *καὶ νοσεῖ νόσῳ μακρᾷ, καὶ τηκεδών αὐτὴν διεδέξατο*. In another passage Homer refers to a father "who lies in sickness . . . a long while wasting away,"¹⁶ and he also may well have been a consumptive, though such a conclusion is not absolutely certain. Hippocrates, however, uses *τήκω* several times in connection with consumption,¹⁷ and especially noteworthy in his use of *τήκονται* with reference to consumption of the spinal marrow.¹⁸ Aristotle¹⁹ also has an example.

Fl. 468 B.C. Though the expression is too brief to admit of a solid interpretation, it is at least possible that Sophocles²⁰ had con-

sumption in mind when he said: "smitten not by wasting sickness," for Hippocrates often designates this disease by *φθινας*, with or without *νόσος*.²¹

Ca. first half of fifth century B.C. Euryphon, a celebrated physician of Cnidos in Asia Minor and an older contemporary of Hippocrates, treated consumptives with the milk of she-asses and mothers, and likewise employed actual cautery.²² A scene described by Plato may possibly refer to him, and in this passage he is ridiculed for treating the consumptive Cinesias with cautery.²³ Furthermore, if he be the author of the "Cnidiae Sententiae"²⁴ in the *Corpus Hippocraticum*, his knowledge of consumption was already well defined in the pathology of the disease. In the "De Affectionibus Internis" of this collection appears a lucid discussion of three divisions of phthisis²⁵: first, pulmonary infection caused by a flow of putrid phlegm from the head to the lungs, causing death usually within a year's time; second, that caused by over-exertion, in which the patient suffers as in the first case, except that the sputum is of a heavier consistency, the cough more aggravated in the case of older patients, the pain in the lungs more marked, and the patient feels as if a heavy weight were resting on his chest; pain also appears in the back, the skin becomes transparent, and at the slightest exertion he gasps for breath. Those afflicted with this kind of consumption live longer, but eventually die within a period of three years. The symptoms of the third form of phthisis are recognized by blood and bile in the spine, a watery phlegm and bile in the veins; the patient becomes emaciated, his appearance is black and swollen, the parts below the eyes become pale, he experiences difficulty in breathing and in coughing as well, until a temporary relief is secured by vomiting up bile and phlegm. This disease is of longer duration than either of the former, but the patient usually dies within nine years.

A system of therapeutics had already been worked out as early as Euryphon, and in

his treatment the primary purpose seems to have been to build up and replenish the system. The milk of wolves, asses, cows and goats is prescribed, as well as proper purgatives, mild exercise in the open, vapor baths, hot water baths, vomiting, potions prepared from various herbs, wine with honey, certain kinds of meat, and above all quiet and rest.

Fl. 443 B.C. Herodotus knew of consumption and mentions it clearly in the following passage: "For as he was riding, a dog ran beneath the feet of the horse; and the horse, not seeing it, was frightened, reared up and threw Pharnuches, and, after he had fallen, he spit blood, and the disease turned into consumption."²⁶

Fl. 441 B.C. Euripides says of Alcestis: "For she fades and wastes away by disease," and "Cry out, Oh groan, Oh land of Pheres, for the noblest woman, wasting away with sickness."²⁷ The poet here certainly emphasizes the gradual decline of the body which would happen from a slow, lingering disease such as tuberculosis, and there is no special obstacle in the Greek text to neutralize such an interpretation. It is more likely, however, that he may not have had any definite disease in mind, but used the expression only metaphorically.

Fl. 430 B.C. Democritus in one of his lost books treated the subject, "Concerning Those Who are Attacked with a Cough as a Result of Sickness,"²⁸ a title which may indicate that tuberculosis was a common disease and that pre-Hippocratic writers may have had a fairly good knowledge of certain aspects of consumption. The Greek title may be interpreted as referring to the morbid coughing of consumption, but it more probably suggests an insight into a secondary tubercular condition resultant from some other primary disease.

460-357 B.C. Hippocrates describes consumption so often and so fully that we are forced to the conclusion that it must have been very prevalent already in his day. He has given us a truly excellent description of phthisis in the first and second books

"De Morbis,"²⁹ from which it appears that the "Father of Medicine" noticed a frequent association of tuberculosis with other complications of pneumonic diseases, and that a basal lobar pneumonia with empyema may become tuberculous. No doubt cases of pleurisy came under his observation of which the greater number were in reality tuberculous; that a large proportion of these subsequently suffer from consumption is well known to modern physicians. It is not strange, therefore, that Hippocrates discusses consumption in connection with other respiratory diseases. The following passage is typical and presents a variety of interesting and instructive material:

And from the following causes especially does empyema arise in the lungs: if a person, who is afflicted with inflammation of the lungs, does not relieve himself during the critical days, but retains the sputum and phlegm in his lungs, in such a one there appears empyema. If he receives attention immediately, he usually escapes; but if he is neglected, the lung becomes infected and ulcerated from the putrid substance that establishes itself within; and it can neither take in any nourishment worth mentioning nor relieve itself at all of any part of the substance within, but the patient becomes subject to choking spells, his breathing becomes impaired and is accompanied by a wheezing sound, and thereafter he breathes from the upper part of his chest; but finally by reason of the phlegm the respiratory passage is closed up and the patient dies.

Empyema also arises whenever phlegm flows down from the head to the lungs of the patient. At first this downward flow usually escapes notice and causes a slight cough; the sputum is slightly more bitter than usual, and from time to time there appears a moderate fever. In due time, however, the lungs become irritated; they ulcerate within in consequence of the pituita which sticks to them and becomes purulent, and causes a feeling of heaviness in the chest, a violent pain in the front and in the back; the body becomes hotter as the result of higher temperature, and consequently the lungs draw to themselves phlegm from the entire body; this, becoming purulent and of a thick

consistency, the patient vomits up. In proportion as the time advances, the more purulent is the quality of the matter which the patient spits up, the temperature runs up higher, the cough becomes more frequent and violent, and a lack of appetite harasses the sick man. Finally, however, a digestive disturbance takes place in the lower bowel, a condition which appears as the result of the phlegm that goes down from the head. When it comes to this, the patient dies, as stated above, either because the lungs are purulent and decayed or because the lower part of the belly has disappeared.

Hippocrates then continues by describing a second kind of phthisis which is caused by the bursting of a blood vessel; the blood is transformed into purulent matter, and the result is pulmonary ulceration. Finally a third kind of consumption may appear as the result of an acute pleuritis or a chronic localization of phlegm and blood in the pleura, a condition which may likewise cause pulmonary suppuration. In all these cases the disease is curable if treated betimes.

In the second book "De Morbis"³⁰ the phthisical habit and general physical appearance of a consumptive is accurately described. The sputum is thick, yellowish in color, fairly sweet to the taste; gnashing of teeth, pain in the breast and back, persistent crepitations, dryness in the throat, a reddish hue in the hollows of the eyes, dullness and hoarseness of voice, swelling of feet, bent finger-nails, emaciation, redness of cheeks are all mentioned as concomitant physical characteristics; as are likewise hemoptysis, cough, and expectoration of purulent matter that is excessively moist and of the appearance of hailstones, emitting an obnoxious odor when placed on live coals, languor, physical debility, loss of hair, disorder of the bowels. The latter condition was regarded as especially dangerous. The test which Hippocrates applied to the sputa has held its ground until modern times and the age at which consumption is most prevalent was the same in Hippocratic times as in ours, namely from eighteen to

thirty-five years.³¹ Empyema prolonged beyond a period of forty days leads to consumption.³²

Of all diseases that raged on the island of Thasos none reaped such a bountiful harvest as consumption,³³ for "of all maladies it was the most virulent and most difficult, and exacted the most deaths." Hippocrates then proceeds to enumerate the symptoms already referred to, and adds others, such as frequent chills, continuous fever, excessive perspiration, inability of the patient to keep warm, both constipation and diarrhea, excessive and abundant urination, and marked emaciation. Frequent coughing spells and abundant expectoration accompanied the disease, but violent pain was generally absent. The constant lack of appetite of the patient was very noticeable, and for long intervals not the slightest desire for drink was manifested. The loss of hair, whitish skin, lentil-colored (pale) complexion, reddish color around the eyes, shoulder blades like the wings of a bird, conclude the portrayal of this picture.

Though pulmonary consumption receives by far the greater attention, Hippocrates often mentions scrofula, or the strumous disease,³⁴ which in modern medicine is classified as a tuberculous disease because it is nearly always due to the growth of the tubercle bacillus in the lymphatic glands.³⁵ The ancients, to be sure, did not know this, but it is well to keep the antiquity of this malady in mind in subsequent evaluations. Tuberculosis of the vertebrae³⁶ was known to our author, who several times discusses spine disease and consumption of the spinal marrow. Spinal curvature is also described with wonderful insight into the etiology and general course of such an affliction, and in this connection Hippocrates states that such persons usually have "hard and uncocted tubercles in the lungs"; further on he says that "most of such cases are associated with abscesses or tubercles within the spine . . . but these will be discussed among the chronic pulmonary diseases." Modern medical authorities are generally

agreed that nearly all spinal curvatures are due to tuberculosis,³⁷ and the little Greek hunchback without doubt was made so by the same disease. Consumption of the hip,³⁸ of the larynx,³⁹ and of the kidneys⁴⁰ is also referred to. In renal tuberculosis an abscess is formed near the spine as soon as the kidney becomes filled with pus, and under such conditions operative measures are suggested. A successful operation may save the patient, but "this disease is dangerous and may accordingly lapse into renal consumption." Though not specifically tabulated because the ancients did not so classify it, tuberculous osteomyelitis of modern medicine is probably the same disease as the consumption of the vertebrae and hip-joint of Hippocrates. Enlargement of the hypochondriac region is several times mentioned as being an unfavorable symptom in the case of consumptives⁴¹; though this enlargement may refer to several different organs according as it appears on the right or the left side, yet its association with consumptives is significant.⁴² It is very probable that Hippocrates had noticed this condition in advanced stages of a systemic tuberculosis, and so regarded it as a danger signal to consumptives. Modern physicians are inclined to diagnose an enlargement on the left side as due to a morbid condition of the spleen.⁴³

The therapeutics of consumption may in a general way be regarded as similar to those in use at the present time, namely the free use of milk, of either asses, mares, goats or cows, especially in the absence of much fever and headache, limited quantities of fish, meat and fats, moderate walking exercise, avoidance of great changes of temperature and colds, the use of various palliatives, herbs, and other compounds.⁴⁴

Hippocrates believed in the hereditary transmission of tuberculosis, for he says "consumptives beget consumptives"⁴⁵; this observation verifies our opinion of the keen insight of the great Greek physician, who has often been denied this very attribute which he manifests so clearly. The question

of hereditary transmission is one on which there appears the widest divergence of opinion, but recent studies by Warthin and Cowie⁴⁶ would tend to reestablish the belief held by Hippocrates.

Hippocrates seemed to recognize also a form of phthisis which arises through *φύματα*, Latin *tubercula*.⁴⁷ Many scholars have accepted this expression as evidence to prove that he was acquainted with miliary tuberculosis. Virchow⁴⁸ entirely rejects this explanation and draws the conclusion that the word *φύματα* was used synonymously with abscesses. His position is unconvincing and untenable. The question has been discussed pro and con for ages and "adhuc sub iudice lis est." It is possible that an excessive enthusiasm for the medical knowledge of the ancients has tempted and induced some to read too much into the Greek word, and an examination of the different passages in which *φύμα* occurs cannot, of course, reveal any direct proof that Hippocrates understood the modern scientific theory of tuberculosis. Indeed, this would be too much to expect, for there was no such thing as scientific medicine viewed from the modern standpoint. We may also say that the exegesis of several passages is purely a relative matter, inasmuch as the Greek readings are not always uniform. The reader can safely adopt the following conclusion: Hippocrates as a result of his keen observation, which is everywhere apparent in his work, based his use of the word *φύματα* upon a visual acquaintance with the nodular elements found either in the lungs of animals or in men, for he had ample opportunity to investigate them; he recognized the tuberculous state but did not understand that the tubercle bacillus was an essential condition of the disease. Clinically he did not demonstrate the disease known as miliary tuberculosis, but visually "the hard and unconcocted *φύματα*" amounts to the same thing.

Fl. 427 B.C. The habitus phthisicus⁴⁹ of Hippocrates, as representing a peculiar, flat-formed chest with protruding scapulae, deli-

cate features, long neck, sloping shoulders, and imperfect physical development about the chest, aroused the mirth of Aristophanes and the familiar sight of emaciated consumptives doubtlessly provoked the word *φθινύλλα* as an epithet of reproach: "Yes, by Zeus, you skinny old consumptive."⁵⁰

Ca. 420 B.C. Among the miraculous cures recorded on the stele at Epidaurus the inscription mentions a consumptive patient, and without doubt many tubercular patients sojourned to the same place for treatment.⁵¹

Fl. 399 B.C. Plato also touches upon phthisis. He says: "If a person sells a slave who is ill with consumption . . . or with some other lingering and incurable disease not noticeable to the average man, in case he is sold to a physician or trainer, there shall be no restitution."⁵²

Fl. 380 B.C. It would seem that already in the time of Isocrates a widespread belief existed that consumption was a contagious and infectious disease and could be readily communicated. This is well illustrated in the Aegineticus⁵³ in which Isocrates discusses a dispute about an inheritance willed by a certain Thrasylochus to a friend who had nursed him in his lingering illness. The disease was consumption and is several times mentioned or referred to by the Greek words *φθόγη*, *ὅς ἔμπυος μὲν ἦν πολὺν χρόνον, τοσούτον μὲν χρόνον ἀσθενήσαντα*; Thrasylochus was confined to his bed for six months and was nursed by the friend till he died. The friends of the latter, however, warned him against the danger of such an undertaking, which he recalls in the following words: "As many of my friends as came to see me, expressed their fear that I also would die, and advised me to look out for myself, asserting that most of those who have been in attendance on such a disease have themselves likewise perished."⁵⁶ This passage is especially instructive in that it proves a general acquaintance with the communicable aspect of consumption on the part of those who seem to have had no special knowledge of medicine.

Fl. 347 B.C. The philosophic and scien-

tific mind of Aristotle frequently gave expression to practical medical discussions. He was especially interested in the etiological factors which contributed to specific diseases and from this angle refers to consumption several times. He says that certain weather conditions bring on decay of the bones, cough, sore throat and consumption⁵⁷; in contrasting the essential difference between incontinence and intemperance he says: "Depravity resembles dropsy and consumption amongst diseases, and incontinence resembles epilepsy; for the former is a permanent, the latter not a permanent trouble."⁵⁸ He also is of the opinion that the hair grows in some diseases, as especially consumption,⁵⁹ and while Hippocrates tells us that consumptives lose their hair, these two statements are none the less true. In incipient phthisis the hair grows rapidly and long, but in the last stages of the disease it falls out. To a modern reader, however, Aristotle is most interesting in this connection because he had very definite views on the contagious and infectious aspect of consumption and includes it among the communicable diseases because it vitiates the air in the manner of a pestilence. He asks:

Why is it, that those who approach a consumptive patient are stricken with consumption? . . . The contagion of consumption arises for the reason that it infects the breath and makes it heavy; moreover, all diseases, which originate from a corrupt exhalation, such as pestilential, attack us very readily; for he who approaches inhales air of that kind.⁶⁰

Fl. 355 B.C. Demosthenes does not pay the offspring of Lycurgus a very high tribute for he refers to his son Pytheas "who has grown wealthy enough to keep two mistresses, who have happily brought him on his way as far as consumption." The word here used is the Attic word *φθόη*.⁶¹

Fl. 322 B.C. Menander gives an instructive figurative use of *φθισικόν*; he represents envy as the worst of all ills that, irrespective of time, makes the impious plans of a godless soul a consuming disease.⁶²

Ca. third century B.C. The ancient sepulchral inscriptions are too stereotyped to present much explicit information concerning definite diseases, but among the few bearing on consumption the most interesting by far is that of a child who died at the age of four years, five months, and twenty days. This inscription was found near Smyrna and reads as follows⁶³:

A helpless child am I who have reached this tomb, O traveller; even you who have chanced upon my stony slab will straightway weep at the suffering which I have endured in the brief compass of my life. When the Hours brought me to light by the travail of my mother, my father joyfully took me up in his hands from the earth and washed me clean of the impure blood, and he in person placed me in swaddling clothes and made prayers to the gods which were not to be; for from the first the Fates had made all decisions about me; and my father chose my mother as my nurse and reared me. Forthwith I grew lustily like a young plant, and was beloved by all; but in a short time the seal of the Fates came upon me, who made me fast with a dread disease about the testicles; but my unhappy father healed my dire disease, thus thinking to preserve my fate by his treatment. And then, moreover, another disease seized me, most grievous by far, and many times worse than the former; for the metatarsi of my left foot had sepsis in the bones, and so my father's friends performed an operation on me and took out my bones which were the cause of grief and groans to my parents, and in this way I was healed again as before; not even thus did my ill-boding birth have its fill of smiting, but fate again brought upon me another disease of the belly, enlarged my intestines and wasted away the other parts until such time when my mother snatched life from my eyes; this I suffered in the short space of my life, O stranger, and I, doomed to a sad end and survived by three unwedded sisters (or brothers), have left the hated consumption as an heritage to those who begat me.

How poignant, full of appeal and simple pathos! How distinctly modern the childlike emotions in health and sickness here depicted! "The Great White Plague" has truly exacted its toll in all ages among the

young and old, and the above inscription with but slight alteration could well be transferred over to the graves of numerous unfortunate children whom Fate still serves in similar fashion.

This inscription, however, chiefly concerns us as an interesting case of consumption in which a secondary condition has been set up. We may safely conjecture that the two diseases referred to are but manifestations of a general tuberculosis which seized visibly upon the testicles, the metatarsal bone and the intestine, and so resulted in urogenital tuberculosis, tuberculous osteomyelitis, and tuberculosis of the intestine. A sepsis of this kind is fairly common in children even today especially in systemic tuberculosis. It has been found, too, that not less than 25 to 30 per cent of the cases of tuberculosis which occur in early childhood are the result of intestinal infection and that the curve of incidence of tuberculosis in children begins at the early age of six months, and falls especially between the ages of three and four. This undoubtedly can be explained by the fact that in early childhood children convey the infectious material to their mouths by their fingers, inasmuch as they play on their hands and knees during that period, and also by the fact that at this time infected milk would be taken most freely. Such a theory would be a very plausible explanation in this case. The medicines administered by the father when the first symptoms of the disease appeared were evidently given on the basis that his child had two distinct maladies, whereas the two may have been in reality one and the same disease. It is interesting to note also that the physicians of those early days already recognized that practically the only hope of eradicating tuberculosis of the bone lay in surgical methods, and it would seem from the wording of the inscription that the operation was at least locally successful.

In the absence of more complete information a final diagnosis can hardly be attempted and other variants may be

offered in explanation; whether this case be regarded as an example of traumatic dissemination or of a tuberculous infection following whooping cough, measles, or some other disease to which children from the ages of three to eight are very predisposed, we may be reasonably sure that this Greek child had tuberculosis of the testicles, of the bone and of the intestine, whether as a primary or secondary factor.

Third century or beginning of second B.C. Another inscription, found near the temple of Aesculapius at Epidaurus mentions a man who lay ill with a hated disease, *ἐν πύσιν ὄν στήθος*.⁶⁴ This man had suppurating lungs, and the Greek expression here used is analogous to the passage in Isocrates already quoted,⁵⁶ which clearly refers to the consumptive in question.

Second or first century B.C. An inscription from Cleonae does not admit of satisfactory restoration but it is sufficiently intelligible to show that a lady named Nomonia, had "wasted away with hateful consumption."⁶⁵

Fl. 8 B.C. Diodorus Siculus informs us that Phayllus, a general of the Phocians, died in the Sacred War, 351 B.C., as a result of consumption, which lingered a long time and caused him great physical pain.⁶⁶

Fl. Augustan Age. Crinagoras of Mytilene does full justice to "the bones of the scoundrel who lies in this unhappy earth; it crushes the protruding breast and the unsavory, jagged row of teeth and the legs fettered like those of a slave, and the hairless head, the half-consumed remains of Eunicides still full of pale consumption."⁶⁷

Fl. end first century A.D. Dioscorides' "De Materia Medica" is chiefly interesting for the therapeutic agents enumerated, and was extensively used by Galen. Inasmuch as this phase of consumption will receive more detailed consideration under the material found in Galen we shall leave the latter author to take care of the former.

Fl. 80 A.D. Plutarch never fails to make an interesting contribution; a fitting answer is the following: "But we may answer them

(young fellows who take delight in showing off their smattering knowledge of logic and mathematics) with Philotimus, who, on being asked by a consumptive for a remedy against a whitlow and perceiving his condition by his color and dyspneic condition, replied: 'Sir, you have no reason to worry about that.'"⁶⁸ Again: "The sight of a consumptive man is no delightful spectacle, but the pictures and statutes of consumptives we can view with pleasure because imitation directs the mind to that which is conformable to the nature of the thing."⁶⁹ In another passage our author pokes fun at the professed happiness of Epicurus and his followers and suggests that not even in their case was human reason able to avert diseases; "for if it could, no man with sense would ever fall under stranguries, gripes, consumption, or dropsy."⁷⁰

In the "Parallel Lives" as well there are several interesting allusions to consumption: "He [Aratus] offered sacrifices called Antigonea in honor of Antigonus, . . . to the praise of a man rotting away by consumption."⁷¹ Subsequently Antigonus is again referred to: "Besides his malady had now thoroughly settled into consumption and continual catarrh. . . . In the schools we were wont to learn that, after victory was won, he exclaimed for joy: 'O glorious day,' and forthwith bringing up a quantity of blood, that he fell into a fever, which never left him till his death."⁷² Plutarch tells us that the Roman people were possessed with an insatiate desire to see Tigellinus dragged to execution, that they were so insistent on this that the emperor was compelled to check their spirit by an edict "announcing that Tigellinus could not live long, inasmuch as he was wasting with consumption, and requesting them to refrain from making his government appear cruel and tyrannical."⁷³

Ca. first century A.D. Another very famous Greek physician was Aretaeus of Cappadocia, who probably practiced medicine during the time of Nero. In many respects he follows up the principles of the Father

of Medicine, but his description of phthisis is even more clear and definite. In the particulars of this disease he gives the careful description of an eye-witness. According to him it is caused (1) by an abscess in the lungs; (2) by a chronic cough; (3) by hemoptysis.⁷⁴ In the same passage he also makes a distinction between real phthisis and empyema, and farther on in the book⁷⁵ he gives a comprehensive description of pulmonary abscesses as a result of which the lungs become ulcerous and finally phthisical. In another book we have a further excellent description of phthisis as caused by hemoptysis, and the symptoms of this disease resultant from chronic catarrh are accurately set forth. His discussions are all convincing and clear and evince a thorough medical knowledge. What a lucid picture he portrays here:

If an ulcer arises in the lungs from an abscess, or from a chronic cough or from the bringing up of blood, and if the patient cough up pus, the malady is called *φθόη* and *φθίσις*; but if the chest or side develops matter, which is moreover brought up by the lungs, the name is *ἐμπύη*. But if in addition the lungs keep back an ulcer, and are eaten up by the pus that has gone through, the disease no longer receives the name *ἐμπύη* but *φθόη*. Moreover, it is also accompanied by a continuous fever, latent and never ceasing, but escaping notice during the day by the perspiration and coolness of the body.

There are innumerable varieties of the sputa, livid, black, dark, yellowish-white or pale green; broad, round; hard, indissoluble, or spongy and readily dissolving; without smell or ill-smelling; all these are varieties of pus. But those who try the fluids either with fire or water seem to me not to know consumption very well; for the sight is more to be trusted than every other sense, not only relative to that which is brought up, but also with regard to the appearance of the sick person. For if a layman should see a person pale, weak, coughing, and emaciated, he rightly divines consumption. But those who have no ulcer in the lungs, yet have wasted away with chronic fevers, cough frequently, hard, and fruitlessly, bringing up nothing, such persons are likewise called consumptive, and that too advisedly. They

have a heaviness in the chest, for the lungs are without feeling of pain, distress, anguish, no appetite, chills in the evening and heat in the morning; sweat as far as the chest, more intolerable than the heat . . . their voice is hoarse, the neck somewhat bent, thin, and not easy to control; fingers slender, but joints thick; of the bones there is the form only, for the flesh wastes away as if consumed by a slow smouldering fire; the nails of the fingers are curved, the pulps are shrunken and flat; for on account of the loss of flesh they retain neither their distension nor roundness. . . . The nose is sharp and slender; checks protruding and red; eyes hollow, glittering, and bright; countenance swollen and pale, or livid. The thin parts of the jaws rest upon the teeth and resemble a smile, in other respects corpse-like. So also in all other parts they are slender, without flesh; the muscles of the arms not perceptible, and not even a trace of the breasts, while the nipples alone are visible. It is not only easy to tell the number of their ribs, but also to know where they terminate; for not even at the vertebrae are the articulations easy to conceal; and the conjunctions with the sternum are also visible; the spaces between the ribs are hollow and rhomboidal. According to the circumference of the bones the hypochondriac region is sunken and drawn back, the region of the stomach and the flanks clinging to the dorsal region. The joints are distinct, distorted and devoid of flesh, as are also the tibia, hip and humerus. The spine of the vertebrae, formerly hollow, protudes, and the muscles on both sides have wasted away; the full shoulder-blades are clearly visible just as the wings of birds. If such patients have bowel-complaint, they are hopeless; but if there is a turn for the better, a condition opposite to that which is fatal recurs.

The old are not frequently afflicted, but they seldom recover; the young till the prime of life become phthisical from blood-spitting, and get well, though not readily; children continually coughing even till they become consumptive, yet recover; the habitus phthisicus is found among the slender, those whose scapulae are flat and wing-like, those who have prominent thyroid cartilage, are pale and have narrow chests; its haunts are the moist and cold climates, the twin-brothers of the disease.⁷⁶

Fl. 90 A.D. Epictetus reminds us that we must bear life's burdens in proportion to our strength, but that we must never neglect nature; for a certain course may suit a strong man, but not a consumptive, whose *φλέγμα* he represents figuratively as the drivel of the sickly novice in philosophy. To benefit mankind we must carry our principles into everyday life and not vent "our own phlegm upon them." Even a Cynic, he says, "has need of a physique of a certain quality; for if he come forward with a consumptive figure, thin and pale, his testimony no longer carries the same force."⁷⁷

Fl. 100 A.D. The Greek physician, Rufus of Ephesus, states that in cases of consumption an incision of the chest near the lowest rib and penetrating well into the interior of the lung has often produced good results; for it allows the pus to drain out and so causes the ulcer to absorb. The consumption which he here refers to is the result of empyema.⁷⁸

Fl. 140 A.D. According to information vouched for by Appian, Lepidus died of consumption in Sardinia in 78 B.C.⁷⁹

Fl. 160 A.D. The psychoanalytic mind of Artemidorus Daldianus in his "Onirocriticon" presents to the modern reader ample material for psychological research. Schopenhauer made the statement that the ancient Artemidorus taught in reality a true symbolism of dreams. That dreams are not to be taken literally just as they are presented in sleep, but that such images are to be understood symbolically is not a new principle of analytical psychology but an ancient idea which appears at its best in Artemidorus. His five books are full of extraordinary material, which dispels all superstitious wonder and mystery but seeks a true explanation for all dream phenomena. The efficacy of dreams and their interpretation are pictured sometimes in a most amusing and entertaining manner. To have a hood of sheep's wool on one's head instead of hair portends a lingering disease and consumption, because the constant wearing

of such a hood makes it seem to have grown together with the head.⁸⁰ Among the ancients such hoods were worn by the sick and old. False teeth evidently did not enter into the psychology of Artemidorus for "if all teeth fall out, it signifies . . . to the sick a lingering illness and consumption, but at the same time gives them the assurance that they will not die; for without teeth a person cannot partake of any nourishing food except gruel and porridge; moreover no one of the dead loses his teeth."⁸¹ If a person dreams that he is drinking fish-oil, his dream typifies consumption; "for as a matter of fact fish-oil is nothing more than a mass transformed by a process of putrefaction." The Greek word *σηπεδών* here used suggests a fundamental process in consumption, namely sepsis.⁸² Pickled and salted meat denotes protraction and postponement in one's plans; for by salt, meat is indefinitely preserved. "In other things, however, it symbolizes consumption and grief, but often also a disease because by the process of salting meat is made tender."⁸³

Whatever is unceasingly about some portion of the body has the same relation to that which has grown to it. Accordingly someone dreamed that wood grew out from his fingers, and another in turn that he had wool growing from his chest and scapulae. The first became a pilot, the second a consumptive; for the one constantly had in his hands the helm, but the other as a result of his disease wool about the breast.⁸⁴

Fl. 160 A.D. In Lucian Hermes enumerates to Charon some of the messengers of Death who carry men off in the midst of their hopes. "His messengers and servants are very many, as you see . . . chills, fevers, consumption, inflammations of the lungs." Men have imagined that their present possessions would be theirs forever, and so when the servant, standing at the bedside, summons them and leads them away "in the bonds of fever or consumption," they make a great ado about it, for they never expected to die so soon.⁸⁵

Fl. 160 A.D. Aristides refers to consump-

tion in several places and shows quite clearly that he was thoroughly familiar with the disease and its symptoms. Because of his own long illness he was especially interested in diseases and their cure. Though a man of learning and understanding, he seems to have believed fully in the efficacy of dream-cures as reported in the temple of Aesculapius. He mentions consumption in this connection first in a reference to a severe attack of cold, violent and prolonged cough, then the characteristic emaciated condition visible in the face and jaws; this he says, "the god declares to be consumption." He then recounts how a cure of consumption and catarrh was effected in a dream.⁸⁶ Subsequently in discussing the importance of concord, agreement, and unanimity of feeling among cities, he contrasts and compares his statements by saying that "factional discord is everywhere a terrible thing, productive of turbulence and confusion, and akin to consumption. For it draws and sucks out from him upon whom it grows all strength; it completely drains him and does not cease until it utterly destroys him root and branch."⁸⁷ He further severely decries the tendency of his times to find something useful and charming in the corruptions of true eloquence, a fallacy which resembles an idea that those whose bodies are ill with consumption, dropsy and leprosy are by far the most comely; and that they have many admirers, no one of whom would be glad to meet them, while those who are in excellent health and whose beauty is in high esteem are inferior to them.⁸⁸

Fl. 163 A.D. Galen, with comprehensive thoroughness that is characteristic of this Greek master mind, omits very little in his pathogenesis of consumption. It will be profitable to assemble the material in his work under several distinct pathological divisions.

Definition. Consumption is an ulceration of the lungs, breast or pharynx accompanied by a slight cough, fever, and complete emaciation of the body; it is a wasting

away of the body by reason of suppuration in the lungs or breast, and its condition of suffering is either difficult to cure or incurable. Medically speaking, *φθίσις* differs from *φθόη*; for the former is usually defined as the complete diminution and melting together of the body, while the latter is fitly defined as a consumption and destruction of the physical organism from an ulcerous condition. The growth of the body is often impaired, and this disease is called by some *ἀτροφία* (macies), by others *φθίσις* of the part affected. He says that the Athenian especially called the *φθίσις* of Hippocrates *φθόη*, a disease which is the result of incurable ulcers of the lungs and so brings a defection and emaciation of the entire body, and a slight fever as well. Consumption belongs to the lingering diseases, together with dropsy, melancholy, and empyema. It is especially prevalent in the fall of the year, though found also in the spring. Galen reminds us that Hippocrates also mentions ischiadic consumption as a result of which the body wastes away because of sepsis near the "os sacrum"; likewise also renal consumption, inflammations of the liver and spleen when changed into pus consume the patient. These suppurations, however, are much more readily healed, and so less dangerous than those which affect the lungs.⁸⁹

Etiology. One of the causes of consumption is blood spitting, which in turn may be brought about by youthful excesses, trauma, colds, lying on the ground or similar conditions. Often it is the result of pleuritis, particularly if the latter is not cured within a period of forty days. It may further be caused by defluxions of phlegm from the head to the lungs, bringing about successively suppuration of the lungs and consumption.⁹⁰ Then again it may be the result of hemoptysis, suppression of blood discharges, and occasionally comes on after a quartan fever.⁹¹ Fluctuations of air in the early springtime and fall make many consumptive.⁹² Consumption is a communicable disease and so may be caused by contagion

or infection, for "it is a dangerous thing to associate with people who have it, and especially those who emit such a putrid breath that the homes in which they lie ill smell bad."⁹³ Lung and breast affections are prolific factors of causation; pneumonia and empyema also contribute tubercular patients. Young men are more susceptible to the disease from the ages of eighteen to thirty-five, because that time of life is more prone to intemperance and to those violations of nature which may bring on blood spitting; and consumption invariably follows the latter.⁹⁴

Semeiology. The habitus phthisicus of Hippocrates again persists, and so the "ancient physicians call those consumptive and wasting away who are physically disposed to suffer the disease. Moreover, to this class especially belong those whose breast is so absolutely narrow and hollow that their shoulders project like wings, whence they are called *πτερυγώδεις*, that is "winged." Furthermore, the head of these is readily filled up and sends forth many defluxions to the respiratory parts. When both symptoms occur in the same person, namely the malformation of the breast and the weakness of the head, such natures are exposed to consumption."⁹⁵ Further symptoms are found in the expectoration of a fluid very similar to liquid bile, of a color midway between yellow and pale-yellow, but without acridness; the quantity becomes daily greater, a slight fever accompanies the process, and finally emaciation ensues. In the course of about four months a little blood is ejected with the pus, the fever increases, and the wasting away becomes more marked, until complete physical exhaustion sets in with consequent death. The disease lasts for six months or longer.⁹⁶ Consumptives usually suffer a loss of hair, a condition which indicates that the patient is dangerously ill; in the event that diarrhea supervenes, death is an inevitable consequence.⁹⁷ Consumption by empyema is due to the formation of pus between the breast and lungs, and unless this is ejected by

coughing, a slight fever will occur, increasing at night and becoming static; sweat arises, cough and a desire to cough, the patience expectorates very little on account of the density and stickiness of the pus as well as the thickness of the membrane which encompasses the lungs; eyes become hollow; cheeks have a ruddy glow due to the fever and the cough. The fingers and their nails appear claw-like, and as the disease drags along swellings appear on the feet; the appetite fails entirely, and even pustules break out on the body.⁹⁸ In true phthisis the patients will continue to live in their emaciated condition as long as they can cough up and clean out the lungs by their sputa, but when that ceases, the respiratory passage is obstructed and the patient is suffocated.⁹⁹ The pulse is small, weak and faint, though moderately fast.¹⁰⁰ The sputa is globular and can be tested by throwing it on live coals, in which case it will give off a very obnoxious odor.¹⁰¹ The paroxysms become daily more aggravated at night and are accompanied by chills and dyspnea.¹⁰² The glance of consumptives is timid and their eyes have a characteristic appearance as if full of $\chi\rho\omicron\tilde{\nu}$ —dried up as if full of flock or possibly dust.¹⁰³

Therapeutics. Effective remedies include proper climatic conditions where the winds are favorable and gentle, as for instance Egypt and Libya, countries with drier climates. Both external and internal medicines were employed, comprehending proper bathing, warm fomentations of oenoleum; tus, pepper, orpiment (sulphur and arsenic), eggs, milk, butter, storax, cabbage, laurel-oil and the best wine; myrrh-oil steeped with a potion of lupines and used first as a fomentation on the feet, which should then be wiped off and smeared with butter, a process to be repeated three times; inhalation of fumes generated from the ivy; hyssop and fleawort boiled in sour wine taken as a drink; parched radishes and colt's foot; laurel berries and pepper, pine nuts with honey to be given early in the morning and late at night; horehound

cooked with honey; one ounce of parsley and pepper slowly boiled with one pound of honey to be taken internally.¹⁰⁴

Galen recommends the following as a very efficacious remedy which has restored consumptives, whose condition has been generally despaired of, to their former health: Take a mountain-squill of one pound weight, cut off the hard portion, but subdivide the soft parts, and place in a receptacle of the strongest vinegar; then steep for thirty days during the hottest weather; next remove the squill and press it out, using the resultant potion early in the morning each day.¹⁰⁵

Another is compounded of the juices of mandrake, myrrh, the flower of the wild pomegranate, castoreum, saffron, opium, anise, parsley, storax, hyssop, seeds of white henbane, all put together according to directions and made into lozenges.¹⁰⁶

Blood spitting should be checked by cutting a vein, by stopping it with posca (vinegar and water), by diminishing its supply through fasting, or by some simple remedy like acacia, hypocist, the flower of the wild pomegranate, juice of the plantain, and others of similar kind. Glowing hot irons are useful against suppuration, for they dry up the breast and direct the flow of pus into the outer parts; Galen says that physicians of the modern school have been wont to alleviate it by poultices and antidotes, and by quick purging through the avenue of the mouth.¹⁰⁷

Our author mentions a large number of remedies of this kind, proving conclusively that the disease was common and frequently treated. Directions for the amount to be used in preparation as well as the dose to be taken are always clearly and definitely stated.¹⁰⁸ The name of Dioscorides often appears in the discussion of various remedies, and Galen was undoubtedly dependent upon him for many of his therapeutic agents.¹⁰⁹

General. Tubercles are also mentioned by Galen and on examination of the various passages the conclusion reached under the

discussion of Hippocrates will be fortified. However, exacting we may be, we can hardly escape the conviction that Galen also observed the hard unconcocted tubercular nodules visible to the naked eye.¹¹⁰ To anyone who reads Galen with an unbiased mind and a fair degree of care it becomes increasingly clear that the ancients were afflicted with most of the tubercular manifestations known in modern times. The frequent employment of the terms, gibbositas, coxa, tumor, phymata, tubercula dura and cruda cannot mean anything else and furthermore presents corroborative material of the first order.¹¹¹

Fl. second century A.D. Moschion says that sterility both in men and women is due to a diseased condition, and especially is this true in the case of lingering diseases. In the female this often takes place, "if she becomes thin, emaciated, consumptive, or wastes away."¹¹²

Fl. 180 A.D. Pausanias interestingly describes the dream of a certain Phayllus in the following words:

Among the votive offerings to Apollo there was an ancient bronze statue of a man whose flesh had wasted away and whose bones alone remained. It was said by the Delphians that this was a votive offering of Hippocrates, the physician. Phayllus fancied that he himself resembled this image, and forthwith consumption seized him and fulfilled the prediction of his dream.¹¹³

In another passage he tells of the offerings of Micythus at Olympia in fulfillment of a vow that he had made for the recovery "of his son who had been afflicted with consumption."¹¹⁴

Fl. 180 A.D. It is instructive to note that in his enumeration of the common diseases Pollux groups the following together: φθόγη, φθίσις, φθίνειν, τήξις, φθίνης νόσος, τηκεδών, ἐκτετηκέναι; it would seem therefore that these expressions are more or less synonymous and have a kindred connotation.¹¹⁵

Fl. 180 A.D. Dion Cassius says of Seneca: "After Gaius had ordered him to be put

to death, he let him go because he believed one of his concubines who said that he was ill with consumption and would die ere long."¹¹⁶

Fl. ca. 200 A.D. Diogenes Laertius tells us that Antisthenes, the eminent philosopher, died of a lingering disease, and that he refused to end his suffering by the sword, but bore his disease the more calmly from his love of life. The following epigram is quoted and proves that the lingering disease was consumption: "In life you were a bitter dog, Antisthenes, born to bite people's minds with sayings sharp, not with actual teeth. Now you are slain by fell consumption; perchance someone may ask; 'But why it is so?' 'Tis altogether necessary to have some guide to Hades.'" ¹¹⁷

Fl. second or third century A.D. Diogenes Oenoandensis, the Epicurean, it would seem has consumption in mind in the following: "For often the body, having been compelled to surrender by a long disease, has been reduced to such a condition of thinness and consumption that the skin is almost withered and clinging to the bones while the nature of the inward parts seems to be void and bloodless; yet the soul, remaining alive does not permit the living organism to die."¹¹⁸

Fl. 250 A.D. Philostratus describes a well sacred to Zeus, near Tyana, where the water is favorable and sweet to those who keep their oaths, but to perjurers it brings immediate justice; for it attacks their eyes, hands and feet, and as a result "they are seized with dropsy and consumption."¹¹⁹ In another passage he relates how the king of Babylonia spared the life of a eunuch who had bestowed amorous attentions upon one of the king's concubines, and whose misdeed was punishable with death; but Apollonius suggested to the king that no consumption is so wasting as is love to its devotees.¹²⁰ In a third passage in which he discusses the distinction between medicine and gymnastics he asserts that physicians cure various diseases such as catarrh, dropsy and consumption as well as epilepsy by an

injection or drinking potion or by a plaster application, while the gymnastic art overcomes such a difficulty by proper diet and massage. In the next chapter he enlarges upon this viewpoint by the statement that "in the art of healing doctors must become specialists, one an authority on wounds, another on fever, a third on the eye, and a fourth on consumption."¹²¹

Fl. third century A.D. Phrynichus, the Greek Sophist, defines *φθόγη* as *ἡ φθίσις ἡ ἐν τῷ σώματι γινομένη* and so substantiates previous definitions.¹²²

Fl. 355 A.D. Oribasius, the physician of Julian the Apostate, gives us only abstracts of earlier works, and his discussions on consumption follow Galen closely. His assertions merely serve to corroborate the analysis already given.¹²³

Fl. fourth century A.D. Hesychius gives *τῆξις* and *φθίσις* as equivalents of *τηκεδών* and in this interpretation agrees with Pollux and the several instances enumerated.¹²⁴

Fl. 970 A.D. The citation from Suidas has already been presented.¹²⁵

III. ROMAN HISTORY OF CONSUMPTION

We may now seek for further basic evidence concerning consumption among Roman writers. As was the case respecting literature and art, so also in medicine the Greeks exerted a great influence over the Roman mind and left the impress of their knowledge in unmistakable terminology. The Roman word for consumption is *tabes*, which signifies merely "a wasting away"; other words are *phthisis*, *tussis*, *syntexis*, *atrophia*, *cachexia* and their various derivatives. These words are practically all of Greek origin; that fact, however, does not invalidate the evidence which we find in Roman writers. It may be well also to recall that many of the greatest Greek medical minds received their inspiration almost entirely in Roman environment.

Date uncertain but very early. A most interesting find of a medical character that seems to be distinctly Etruscan, was found

in 1836 in a small lake located on Monte Falterona, a summit on the Apennines. Here were brought to light bronzes of a votive character (*ex-voto's*), probably offerings at some ancient shrine. Some have been clearly identified as being representations of persons suffering from some diseases. Among others there was a frame wasted away by consumption or atrophy. Dr. Emil Braun, the archeologist, offered a novel theory to explain the presence of these *ex-voto's* in a lake at the top of a mountain, and, fanciful though it may seem, one might find in it a possible solution of a curious problem. He suggests that this lake was formed by volcanic action prior to the period when the bronzes were deposited. In time the waters acquired a medicinal quality from the trees the lake contained, yielding a property which modern chemistry extracts from creosote. He calls attention to the fact that the diseases shown in the *ex-voto's* are just such as might be alleviated by that medicine and that a base of creosote is used by medical men in modern times to curb attacks of *phthisis*. Patients laboring under consumption seem especially to have frequented the lake. He also points to similar lakes in China and the editor's footnote refers to several ancient examples. These bronzes may date from a very early period.¹²⁶

Ob. 184 B.C. The earliest literary allusion to consumption is found in Plautus.

In one of his fragments he says: "He was to me the bile, the dropsy, the consumption, the ague."¹²⁷ In the *Rudens*, Charmides entertains the heartfelt wish that the leno Labrax "would spew up his lungs."¹²⁸

Ob. 50 B.C. The traditional blindness of love is a source of amusement to Lucretius especially when the lover's amorous ecstasy is manifested in expressions of endearment over clearly abnormal physical conditions: the lover calls his sweetheart a "slim dearie" when she cannot live from thinness (*pro macie*), while "she is only slender who is practically dead with consumption."¹²⁹ Likewise in the description of the plague at

Athens he recognizes that a tuberculous condition may supervene even if a person escaped the doom of death during the plague, for subsequently "consumption and death awaited him."¹³⁰

Ob. 43 B.C. Cicero may have had consumption in mind when he said that Aesculapius did not destroy Dionysius by causing him "to waste away with a wretched lingering disease," for consumption is often so designated.¹³¹

Ob. 16 B.C.? A pathetic description of death by consumption is given by Propertius in a poem which is an imprecation upon Acanthis, an old wench, who had attempted to alienate the affections of his Cynthia. Venus, however, came to his rescue and he saw "the cough gathering in her wrinkled throat and the bloody spittle pass through the hollows between her teeth; I saw her breathe out her foul breath in the rags which were her father's; the tumbling shed was chilled from the cold hearth. Her obsequies were the stolen bands around her thin hair, and a cap faded by her filthy condition, and a dog too wakeful to soothe my sorrows, when with stealthy thumb I had to slip the bolts of the door."¹³² This is the only example in which the actual death throes of a consumptive are pictured. It is full of pathos, though lack of sympathy for her condition is very apparent, for the poet vents his wrath even upon her one and only friend, the little dog. The symptoms here enumerated are self-explanatory and the very characteristics so often delineated by the various medical authors: cough, ejection of blood, prominent throat and teeth, foul breath, and loss of hair, stamp this case quite conclusively as consumption.

Ob. 8 B.C. Horace refers to consumption as a cough, and mentions it almost in one breath with pleurisy, a fact not without meaning.¹³³ The following expression also probably refers to the same disease. "If perchance any of your fellow-heirs, who is rather along in years, will have a bad cough, you tell him that you will be glad to make over to him from your share"; Kiessling

says advisedly on this passage, "ein böser Husten als Zeichen der Schwindsucht."¹³⁴

Fl. 19 B.C. Vitruvius, in discussing the importance of building in such a way as to avoid certain harmful fluctuations of air, suggests that sick people more readily recover where such noxious atmospheric conditions have been avoided. Although there are diseases, such as colds, cough, pleuritis, consumption and spitting of blood, which are cured by invigorating remedies, and then only with difficulty, yet a mild invigorating climate and atmospheric condition, free from violent storms is a great aid towards recuperation and rejuvenation.¹³⁵ From another passage we derive the information that resin was used as a medicine for consumptives.¹³⁶

Fl. 12 A.D. The *lenta tabe* of Manilius probably refers to the tubercular condition of those who survive the pestilence, a passage which may be profitably compared with that of Lucretius.¹³⁷

Ob. 17 A.D. Ovid seems to employ a figurative semeiology of consumption in his phraseology when he describes Envy as spreading black poison throughout the bones of Aglauros and the midst of her lungs; she wastes away in extreme wretchedness with a slow consumption, as ice smitten by the rays of the sun; she burns not with a fire that sends forth flames, but with a gentle heat; by degrees a deadly chill enters her breast, stopping the passages of life and respiration.¹³⁸

Ob. 17 A.D. Livy has consumption in mind when he says that the states of the Faliscans and Tarquinians were enfeebled by plundering and burning, as by a slow consumption.¹³⁹

Ob. 65 A.D. Seneca, the Stoic philosopher, was deeply interested in things medical because he was beset by constant tendencies to consumption; he was a veritable *Schwindsuchtskandidat*, if we may believe Dion Cassius in the passage already quoted.¹⁴⁰ He himself also testifies that during his youth he had been liable to frequent catarrhal affections, which, through lack of attention, became chronic, and as a result later

on he became emaciated.¹⁴⁰ This experience he expresses more generally in one of his epistles, where he regards phthisis as the inevitable result of a chronic cough that is of long duration and standing.¹⁴¹ "The most temperate are attacked by diseases, the strongest by consumption."¹⁴² His own experience is everywhere evident; he expresses his sympathy for his friend Lucilius because he is tormented by chronic colds and fever, for he can appreciate his plight from personal experience; and his condition became so serious that he was reduced to the utmost emaciation and almost coughed himself to death. His subsequent remarks point to pulmonary consumption: "Now you may mention what you will, bad colds and a persistent cough which forcibly brings up parts of the lungs . . ." ¹⁴³

Fl. 50 A.D. The modern medical world has been only too ready to cast aside one of the greatest medical writers of antiquity in the person of the Roman writer Celsus. Two things are chiefly responsible for this condition, the lack of a modern up-to-date English translation and the mistaken notion that his testimony seems to have no value because external proof cannot be adduced that he was a professional or even a practicing physician. An idle statement on the latter notion, however, would hardly suffice to convince the skeptical; for a conclusion on that score can be impartially reached only by a thorough study of his works, and they everywhere give evidence of an intimate medical knowledge. Whether physician or not, his testimony cannot be disregarded.¹⁴⁴

Celsus wrote a superb description of consumption and its different species¹⁴⁵:

The tabes [consumption] often keeps those, whom it attacks longer in a state of continued danger. And of this also there are several species. One of them occurs when the body is not nourished; and, since something is naturally ever leaving it, while nothing succeeds in its stead, a most extreme emaciation takes place; and, unless an attempt is made to cure it, death ensues. This the Greeks call *ἀρροφία*. It is wont to happen from two causes; for either from excessive fear a person takes less, or from

excessive desire he takes more than he ought to; thus either too little weakens or too much vitiates. There is a second species, which the Greeks call *καχεξία*, where the condition of the body is bad; and on this account all of the nutriment becomes putrid. . . . Besides the consumption it sometimes also happens that the surface of the skin is made rough and irritated by frequent pimples or ulcers, or some parts of the body swell. The third, and by far the most dangerous, is that species which the Greeks call *φθίσις*. It generally starts from the head; thence it trickles down into the lungs; then follows an exulceration, and as a result there occurs a slight fever; and even though this subsides, nevertheless it returns; there is also a frequent cough; the patient spits out pus, and sometimes bloody matter. Whatever the patient ejects by coughing, has a bad smell, if placed upon a fire; and so those who are not sure of the disease, use this means of identification.

Celsus then in turn discusses each division more in detail and gives remedial suggestions. In true phthisis the disease must be arrested in the beginning, for if it continues long, it is not easily overcome. He suggests sea voyages, change of climate, removal of patient to different atmospheric conditions, as for instance from Italy to Alexandria; business must be laid aside, sleep indulged in, catarrhs avoided, crudity guarded against as well as extremes of heat and cold; milk, gruel with milk, rice, spelt butter and honey, and various invigorating foods are mentioned. The most important of them all are proper attention to diet, travelling, sailing, and the eating of gruel. Diarrhea is to be avoided, and frequent vomiting of blood is fatal. The patient should abstain from wine, should refrain from bathing, and avoid emotional expression. Ischiadic diseases, scrofula, and tubercles are described in several passages.¹⁴⁶ All discussions are forcefully and cogently presented, so that the interested reader is delighted with the lucid and concise style.¹⁴⁷

Fl. 50 A.D. Columella refers definitely to bovine consumption: "Ulceration of the lungs is also a source of great destruction to cattle." "Thence arise cough and emaciation,

and finally consumption attacks them."¹⁴⁸ Sheep and swine are also susceptible to the same disease, in which a cure may be effected by passing consiligo through the ear.¹⁴⁹

Fl. 60 A.D. The facetious cynicism of Petronius is never dull: Plocamus replies to the invitation of Trimalchio to recite some blank verse or to sing: "In days gone by, when I was a young fellow, I almost got consumption from singing."¹⁵⁰ To feign consumption for the legacy-hunters Eumolpus is bidden to cough frequently. Usury and the money-craze become a madness with the common people of Rome and spread through their limbs "like consumption conceived in their silent marrow."¹⁵¹

Fl. 69 A.D. Caelius Sabinus quotes Labeo's definition of consumption as a disease of the whole body, and this same passage is used by Gellius. It also appears in the *Corpus Iuris*.¹⁵²

Ob. 79 A.D. Pliny evidently spent much time with the medical authors and reviewed much of the material along curative lines. The root of consiligo, already referred to, he recommends as a strong therapeutic agent for all kinds of lung diseases and especially for cases of incipient phthisis; it is a most efficient palliative for pulmonary diseases of swine and cattle, even if merely passed through the ear.¹⁵³ Laurel-berries taken in wine or boiled in hydromel are beneficial for a chronic cough, difficult breathing, consumption, and all defluxions of the chest because they possess a property that detaches the phlegm.¹⁵⁴ The juice of plantago is a curative for phthisis, and similar remedies are often explained.¹⁵⁵ Milk is administered for "phthisis, consumption, and cachexy."¹⁵⁶ The benefit of a sea-voyage is mentioned more particularly in cases of consumption and hemoptysis, "as we recall that Annaeus Gallio but lately experienced after the time of his consulship."¹⁵⁷ It is interesting to remark that this Gallio was probably the brother of the Seneca, the philosopher, whose consumptive condition has already been discussed. Elephants' blood is beneficial for "syntec-

tici,"¹⁵⁸ and *alica* is distinctly a Roman remedy which is particularly useful when there is a tendency to consumption after a long illness; it should be used in a proportion of three *cyathi* to one *sextarius* of water. This mixture is to be boiled till all the water has evaporated, after which one *sextarius* of sheeps' or goats' milk is to be added. Pliny prescribes its daily use, and suggests that honey be added later.¹⁵⁹ Our author proves here that he is not always reliable, for according to Galen, *alica* was known in the days of Hippocrates, the Greeks using the word *χόνδρος* to signify the same spelt-grits.¹⁶⁰ But by far the most novel cure is this¹⁶¹:

Consumptives are cured by a wolf's liver boiled in thin wine, the bacon of a sow fed upon herbs, and the flesh of a she-ass taken with broth. In this manner, especially, the people of Achaia effect the cure of the disease. It is said, too, that the smoke of dried dung (that from the cattle which feed upon green fodder), is beneficial for phthisis if inhaled through a reed¹⁶²; and likewise the tips of cows' horns, when burned, with an admixture of honey in a proportion of two spoonfuls, the whole being swallowed in the form of pills. Not a few people say that goat suet in a pottage of *alica* or freshly melted with honey-wine in the proportion of an ounce to a *cyathus*, the mixture being stirred with a twig of rue, cures both consumption and cough. An author of standing assures us that a patient whose condition seemed hopeless, regained his health by taking one *cyathus* of wild-goat suet with a like quantity of milk. Other writers have said that the ashes of swine-dung in raisin-wine, and the lung of a deer, especially of a hart, dried in smoke and beaten up in wine, are helpful.

Ob. 95 A.D. In the school exercises, which bear the name of Quintilian, we are informed that "consumption let loose upon the inmost vitals daily dispatches some mortals to death before their time," from which it would appear that death by consumption was by no means an uncommon event, even if we make allowance for exaggeration.¹⁶³

Fl. 100 A.D. The disease of Fannia

alluded to by Pliny the Younger was communicable, and contracted from the Vestal Virgin Junia, a relative, while she was acting as her nurse. He states the symptoms as follows: "The fever is continuous, her cough constantly increases, she is reduced to an extreme emaciation, is in a state of complete dissolution."¹⁶⁴ It may be observed that Greek and Roman medical authors quite regularly point to cough as a concomitant symptom of consumption, and not of fever, though cough is mentioned in connection with the latter. In fact several non-medical authors clearly use the word "tussis" to designate the disease consumption. Celsus everywhere emphasizes fever, cough, and emaciation as distinctive signs. It may be instructive, too, to compare Seneca's expression, in which he employs fever, cough, and emaciation several times in unmistakable explanation of his suffering; more than that, the very words convey a striking resemblance: "ad summam maciem deductus."¹⁴⁰ Then, too, the emphasis placed on the contagious aspect of her malady would point to consumption rather than fever¹⁶⁵; again, the lingering nature of the sickness is significant. Though it is not possible to deduce a conclusive argument from the context, by analogy we may safely conjecture that this illness was a case of consumption.

Ob. 102 A.D. Martial's Naevia is a consumptive, but Bithynicus is reminded that she is not yet ready to die. "Because Naevia breathes hard, and coughs severely, and often ejects her spittle upon your bosom, do you think, Bithynicus, that your fortune is already made? You are wrong: Naevia is flattering you, not dying."¹⁶⁶ His request to Charinus to affix his seal less often, or "once and for all do that which your cough ever and anon falsely suggests" and the racking, incessant cough affliction of Parthenopaeus probably point to cases of consumption.¹⁶⁷ It is a source of the utmost disgust to Martial to be annoyed with an accusation quite so ridiculous, as to have embraced Lydia, who "is as well

developed as a bracelet that has slipped down from the arm of a consumptive wench. This thing I am supposed to have embraced in a marine fishpond. I'm not sure; I believe I embraced the fishpond itself."¹⁶⁸

Ob. 134 A.D. Juvenal with stinging satire says that some men will bear any punishments of the gods if they can but keep their ill-acquired gain, even though they may incur "consumption and ulcerous sores."¹⁶⁹

Fl. 285 A.D. According to Aelianus Spartianus, Hadrian's habit of traveling bareheaded in the heaviest rains and during the greatest cold brought on a disease that confined him to his bed, caused a fever and later a flux of blood after which death ensued. A subsequent historian tells us that the disease was consumption.¹⁷⁰

Fl. 340 A.D. The astrological poem of Firmicus Maternus gives several lists of diseases, the inevitable effect produced by the influence of the stars on the destinies of men. Consumption receives a proportionate attention, and is regularly depicted as one of the common diseases, together with black bile, blood spitting, and suppurating diseases. Moreover, the influence of certain definite constellations in specific positions one to the other, as for instance Saturn and Mars, Saturn and Luna, Mercury and Mars, Luna and Saturn, Luna and Mercury, prophesy a consumptive condition.¹⁷¹

Ca. 338 A.D. In the legal fragments dating from before the time of Justinian a person who is consumptive is released from guardianship according to law.¹⁷²

Fl. 360 A.D. Aurelius Victor defines the illness of Hadrian more closely, and lends support to Spartianus that the emperor died of consumption at Baiae.¹⁷³ It may be said, too, that in a subsequent passage a dropsical complication is mentioned, from which it would appear that his malady was not confined to the former disease.¹⁷⁴ Enlargement of the spleen as a concomitant with tuberculosis seems to be the basis of an interesting metaphor in a comparison of the state treasury to a spleen, "because in pro-

portion as the one grows larger, the remaining limbs waste away."¹⁷⁵

Fl. 397 A.D. The person "who perishes from ulcerous joints by fell consumption" in one of the Hymns of Prudentius is again a tubercular type.¹⁷⁶

Fl. 400 A.D. The oldest ancient work on the veterinary art is the "Mulomedicina Chironis" of Claudius Hermerus. It is interesting and useful for many reasons, but concerns us chiefly for its identification of bovine consumption. Inasmuch as this work certainly presupposes earlier Greek writings on the same subject, we may conjecture that the knowledge portrayed was available to earlier generations as well. Chronic colds invite respiratory trouble and lung diseases, which may ultimately lead to consumption.¹⁷⁷ The symptoms are recognized as follows: At first no fever, but a wasting condition growing steadily worse, till the bones protrude everywhere; the animal chews and eats abnormally because it is constantly hungry; a hard excrement is evacuated and the diseased animal lives for a long time; eventually it can no longer regain its feet and consequently eats lying down, as if resting. The disease consumes the marrow which is not benefited by the food taken in; the liver becomes smaller and finally wastes away; by degrees the whole body is consumed like a tree which has been deprived of its larger roots, though sustained temporarily by the smaller ones, but in the end it gradually withers up.¹⁷⁸ The *species articularium* is also a kind of consumption whose symptoms are lameness in the feet and joints; skin hard and contracted; a gradual, more accentuated decline; body and especially marrow in the shoulders corrupted by blood; head becomes similarly effected and finally the lungs; the whole physical organism including the joints is diseased; the kidneys too waste away, but even in this state they refuse neither food nor drink; there is a severe cough, but the animals live for a long time; after complete emaciation death ensues.¹⁷⁹

Fl. 400 A.D. Subsequent Latin medical

writers merely confirm the evidence already presented. Theodorus Priscianus, who drew much of his material from Galen and Soranus, seems to regard consumption as so well known that he concerns himself mainly with the symptomatology of the disease, which consists in a characteristic fever that appears especially towards evening, and sometimes as a quotidian and then again as intermittent. Cough and consumption of the body is an invariable concomitant, and if this condition becomes chronic, recovery is hopeless; the physician must then content himself with an effort to console the patient in the manner of a friend. The high professional ethics and idealism comprehended in such an attitude of mind, it may not be altogether amiss to remark, is decidedly worthy of emulation.¹⁸⁰ In his therapeutics Priscianus had primarily had a view to building and recruiting the strength of the patient by the use of easily digestible meats, such as young doves, fish, brain of sheep and goats, and various soups; change of climate and country as well as long journeys is recommended. "All these remedies I apply and I try by every method to see if, with the help of nature, I may be able in some measure to dry up the body already so completely intoxicated by catarrh." In extreme cases he would resort to cautery. That a consumptive state may invade a patient who has been seriously ill with some other disease was well known to Priscianus.¹⁸¹

Marcellus Empiricus, a contemporary of the former, deals mainly with remedial agents, and in this connection gives several formulae intended to relieve consumptive patients, but his medicines contain nothing new.¹⁸²

Fl. 420 A.D. Caelius Aurelianus rivals Celsus in definite, clear, logical, presentation, particularly in his semiotic descriptions. *φθίσις* or *φθόγη* is so-called because there is a wasting away of the body. Hemoptysis, chronic cough, and pulmonary ulceration are causes. The general physical characteristics agree with the material already

discussed, but the enumeration of details is even more complete than that given by Celsus. He interestingly adds that "a wasting away of the body comes on which is more apparent when the limbs are uncovered, than from the appearance of the face."¹⁸³ Fever, bloody sputa, thick and bluish in color, subsequently leek-green, and finally white, full of pus that is either sweet or salty to the taste; hoarse voice, marked dyspnea, ruddy cheeks, other parts ash-colored; a faded expression in the eyes; crepitation in chest, perspiration, aversion to food, but excessive thirst; pains in lungs, ejection of fibrous matter from the lungs; weak and sluggish pulse resembling the creeping of ants; ends of fingers bent and claw-like; swelling of feet; alternations of heat and coldness in joints; pale nose; chilly feeling around the ears; as disease increases in violence whitish discharge from bowel; phlegm placed on burning coal gives off offensive odor like that of decayed flesh, and when thrown into water it coheres and sinks to the bottom at once. This latter test has persisted till modern times and can be found in up-to-date works on tuberculosis.¹⁸⁴

Fl. 420 A.D. Vegetius gives us further evidence for the existence of bovine tuberculosis. He says that suppuration of the lungs is a serious disease in cattle, whence arise cough, emaciation, and finally consumption.¹⁸⁵ "Animals suffer with consumption just like men."¹⁸⁶ His semiotic description is in close agreement with Claudius Hermerus, whose work he undoubtedly had access to and also used. *Phthisicus* and *syntecticus* are words recurring several times in connection with chronic cough and cold.¹⁸⁷

IV. CONCLUSIONS

This chain of evidence may be safely interpreted in certain specific and well-defined conclusions:

1. Consumption was one of the most common diseases of Classical Antiquity.
2. The delineation of its ravages by both

Greek and Roman writers as well as the conspicuous attention which is bestowed upon it in a general descriptive way bears testimony to a prevalence at least proportionately as great as in our own day; this statement becomes more significant when we consider that proper prophylactic measures were not understood.

3. The contagious and infectious aspect was quite generally observed and known, though not correctly understood.

4. Not only human but bovine consumption was recognized.

5. The hereditary transmission of consumption was a part of pathogenic belief of Hippocrates and probably of other physicians as well.

6. References to pulmonary consumption are most frequent; it would seem therefore that this form of tuberculosis was decidedly also most common.

7. Consumption of the hip-bone, of the larynx, of the kidneys, of the vertebrae and spinal marrow was so tabulated and recognized.

8. Tuberculosis of the lymphatic glands (scrofula), urogenital tuberculosis, tuberculous osteomyelitis, and tuberculosis of the intestine were ancient forms of tuberculosis, but were not so regarded by the Greeks and Romans. The consumptive condition of the body, however, is clearly mentioned in the inscription found near Smyrna (page 385).

9. Tubercles are mentioned by several ancient writers, a fact which we are to understand and not as having reference to the modern scientific theory of tuberculosis and its diagnosis, but as representing a visual acquaintance with the nodular elements of that disease.

10. The ancients had evolved a theory respecting the etiology, symptomatology, prognosis, diagnosis, and therapeutics of consumption agreeing in marked form with the modern pathology of the same malady.

11. Tuberculosis as the modern physician knows it was not an established fact, but the ancient consumption was without the

slightest doubt the result produced by the same phenomena.

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6. *Ibid.*, VI, 25, 57, 83; VII, 74, 76.
7. Job xvi, 8; xvii, 7; xix, 20; xxx, 22; xxxiii, 21; Psalms xxii, 17; cii, 5; cix, 23, 24; Isaiah, xxiv, 16.
8. Leviticus, xxvi, 13–16.
9. Deuteronomy, xxviii, 22.
10. Daniel, x, 17.
11. Isaiah, x, 16–23.
12. Zechariah, xiv, 12.
13. Odyssey, xi, 200–201.
14. Pollux, iv, 187.
15. *τηκεδών* idem quod *φθίσις*, tabes, non vero ut interpretes, sanies.
16. Odyssey, v, 396.
17. Hippocrates (Littre), v, 434, 682; cf. also note τοῖσι τετηκόσι = φθισικοῖσι.
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20. Sophocles, *Antigone*, 819.
21. Hippocrates (Littre), *φθινάδες*, IV, 492; VIII, 568; IX, 186. cf. *φθινώδες*, II, 604, 610, 618, 674, etc.
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23. MEINEKE, *Graecorum Comicorum Fragmenta*, II, 2, 679. *Fabulae Incertae Platonis*.
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28. Diogenes Laertius, IX, chap. xiii.
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30. *Ibid.*, VII, 72–76.
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54. *Ibid.*, 386, C, 11; 389, D, 27; 390, C, 30.
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96. *Ibid.*, VIII, 290 ff.
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99. *Ibid.*, XVIII, A, 116.

100. *Ibid.*, VIII, 481; IX, 179.
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 105. *Ibid.*, XIV, 568.
 106. *Ibid.*, XIII, 164.
 107. *Ibid.*, XIV, 743.
 108. *Ibid.*, XIII, 32, 52, 53, 65, 70, 71, 72, 86, 96, 98, 99, 101-105, 114, 164, 165, 267, 825; XIV, 35, 114, 152, 365, 443, 444, 506, 507, 569, 745.
 109. *Ibid.*, XI, 751, 840, 861, 878; XII, 26, 36, 272; XIV, 9; XII, 590.
 110. *Ibid.*, VIII, 247; XVIII, 505; VII, 922; VIII, 277, 284; XV, 834; VII, 853; XVIII, A, 494; V, 695.
 111. *Ibid.*, X, 881; XIX, 443; VIII, 31; XVIII, A, 75 ff., 505; VII, 922 ff. XVIII, A, 99.
 NOTE: It is interesting to compare Hipp. IV, 498: χοιράδες καὶ τᾶλλα φύματα "scrofulous swellings and other tubercles" with Galen V, 695: χοιράδες, στραγγουρίαι, καὶ τᾶλλα φύματα. Possibly tuberculosis of the lymph glands. But cf. Virchow, *op. cit.* 22.
 112. Moschion (Dewez), Greek text p. 91; Latin text, p. 202.
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 114. *Ibid.*, V, 26.
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 122. Phrynichus. In Bekker, *Anecdota Graeca*, 71.
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 124. Hesychius II, 1379, 1382; cf. Homer, *Odyssey*, XI, 202, and Aretaeus, *Op. cit.*, Bk. I, 14: ἡ φθίσις καὶ τοῦ σκῆψος τηκεδὼν ἐπιγίγνεται (or phthisis and consumption of the body supervene).
 125. Suidas, II, 1099; cf. 4.
 126. DENNIS, G. *Cities and Cemeteries of Etruria*, II, 97 ff. Cf. Pausanias, 38.
 127. Plautus *Fragmenta*. (Delphin) I, 84; the word here used for "consumption" is "tussis."
 128. Plautus *Rudens*, line 511.
 129. Lucretius IV, 1166 ff.: iam mortua tussi.
 130. *Ibid.*, VI, 1201: hunc tabes letumque manebat.
 131. Cicero, *De Natura Deorum*, III, 35: misero diuturnoque morbo tabescentem interemit.
 132. Propertius, IV, 5: Vidi ego rugoso tussim concrescere collo, sputaque per dentes ire cruenta cavos, atque animam in tegetes purem expirare paternas horruit argenti pergula curta foco exsequiae fuerant rari furtiva capilli vincula et immundo pallida mitra situ, et canis in nostros nimis expectrecta dolores, cum fallenda meo pollice clatra forent.
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 135. Vitruvius, XXIV, 15: gravitudo arteriace, tussis, pleuritis, phthisis, sanguinis eictio.
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 137. Manilius, *Astronomicum*, I, 880.
 138. Ovid, *Metamorphoses*, II, 807.
 139. Livy, VII, 22.
 140. Seneca, *Epistolae*, 78, 1-2.
 141. *Ibid.*, 75, 12: sicut destillation una nec adhuc in morem adducta tussim facti, adsidia et vetus phthisin.
 142. *Ibid.*, 91, 5: invadit temperantissimos morbus, validissimos phthisis.
 143. *Ibid.*, 78: Such expressions as "ad summam maciem deductus" and "destillationes et vim continuas tussis egerentem viscerum partes." Cf. interesting article in *Abband. d. k. Gesellsch. d. Wiss. z. Goetting.*, 1877, xxii.
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 149. *Ibid.*, VII 5, 14; 10, 7.
 150. Petronius *Satirae* 64: cantando paene tisiis factus sum.
 151. *Ibid.*, 117.
 152. Caelius Sabinus, 144, *Iurisprud. Anteius.* cf. Gellius, IV, 2, and *Corpus Iuris*, Lib. XXI, t. I, 1.1.
 153. Pliny Elder, 26, 7, 21, #38.
 154. *Ibid.*, 23, 8, 80, #154.
 155. *Ibid.*, 26, 110; 22, 152.
 156. *Ibid.*, 25, 53; in Arcadia bubulum biberent phthisici, syntectici, cachectae; 28, 129.
 157. *Ibid.*, 31, 6, 33, #62.
 158. *Ibid.*, 28, 8, 24, #88.
 159. *Ibid.*, 22, 25, 61, #120.
 160. Galen, XV, 455.
 161. Pliny, 3, 28, 17, 67, #230 ff.
 162. Bostock and Riley suggest that this is an instance of smoking, though not a tempting one.
 163. Quintilian, *Declamationes*, V, 15: penitus visceribus immissa tabes quotidie aliquid ex homine praemittit in mortem.
 164. Pliny Younger, Bk. VII, Ep. 19: insident febres, tussis increscit, summa macies, summa defectio.
 165. Cf. Aristotle, *Problemata*, VII, 8: in this passage fever is not regarded as generally contagious.
 166. Martial, II, 26: quod querulum spirat, quod acerbum Naevia tussit, inque tuos mittit sputa subinde sinus, iam te rem factam, Bithynice, credis habere? Erras: blanditur Naevia, non moritur.
 NOTE: If the reader will pardon the slang, we may suggest that "she is kidding you" instead of "she is flattering you" is decidedly more in accord with the spirit of the original.
 167. *Ibid.*, V, 39.
 168. *Ibid.*, XI, 21, 7: de phthisico cinaedo.
 169. Juvenal, XIII, 95: phthisis et vomicae putres.
 170. Hadrianus. *Scriptores Historiae Augustae* I, 23. Cf. Aurelius Victor.

171. Firm. Matern. Mathes. III, 30; VII, 9, 5; VII, 21, 5; VII, 23, 4; III, 2, 13; 2, 24; 7, 15; IV, 9, 9; 16, 11; V, 6, 2; 6, 10; VIII, 27, 10.
172. Frag. Vatic. (Teubner), fr. 130, 740.
173. Aurelius Victor, De Caesaribus, xv, 12.
174. Aurelius Victor, Epitome, xiv, 9.
175. *Ibid.*, XLII, 21.
176. Prudentius, Hymn II, l. 154.
177. Claudius Hermerus, Mulomedicina (Oder), 47, 48.
178. *Ibid.* 124 chap. I.
179. *Ibid.*, 53, l. 24.
180. Theodorus Priscianus. Bk. II, 8.
181. *Ibid.*, 11.
182. Marcellus Empiricus, c. 23, c. 16.
183. Caelius Aurelianus, De Morb. Chron. Bk. II, 14: corporis tenuitas sequitur, quae nudatis membris proditur magis, quam ex aspectu vultus.
184. *Ibid.*, 14; Bk. III, chap. vi, vii; Bk. v, chap. i ff.
185. Vegetius, Ars Veterinaria. IV, 13: est etiam gravis perniciēs, cum pulmones exulcerantur; unde tussis et macies, ad ultimum vero phthisis invadit.
186. *Ibid.*, v, 54: syntexin animalia patiuntur ut homines.
187. *Ibid.*, II, 10; v, 64.

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